

REMARKS

Claim Status

The undersigned thanks the Examiner for the courtesies extended during the Telephonic Interview conducted on July 29, 2009, and for his assistance in furthering prosecution on the merits of the instant application. During the Telephonic Interview, the rejection of independent claims 1 and 13 in view of the cited art was discussed. No agreement with respect to the patentability of the claims was achieved. The following remarks take into account the content of the Telephonic Interview.

Claims 1-10 and 13-30 are now currently pending, with claims 1 and 13 being in independent form. Claims 1-10, 13, 15, 17, 18, 24, 25 and 27-30 have been amended. Support for the amendments may be found, for example, at pg. 6, lines 15-16 of the specification as originally filed. No new matter has been added. Reconsideration of the application, as herein amended, is respectfully requested.

Overview of the Office Action

The drawings have been objected to under 35 U.S.C. §1.83(a). Withdrawal of this objection is in order, as explained below.

Claims 14-18, 25 and 26 stand objected to based on a minor informality. Withdrawal of this objection is also in order, as explained below.

Claims 29 and 30 stand rejected under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Withdrawal of this rejection is in order, as also explained below.

Claims 1-10, 13, 14 and 16-28 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,287,882 (“*Chang*”), U.S. Patent No. 6,504,180 (“*Heremans*”) and U.S.

Patent No. 5,453,394 (“*Yonehara*”). Claim 15 stands rejected under 35 U.S.C. §103(a) as unpatentable over *Chang*, *Heremans* and *Yonehara*, and further in view of U.S. Patent No. 6,740,604 (“*Kelly*”). Claims 29 and 30 stand rejected under 35 U.S.C. §103(a) as unpatentable over *Chang*, *Heremans* and *Yonehara*, and further in view of U.S. Patent No. 6,902,098 (“*Dautartas*”).

Applicants have carefully considered the Examiner’s rejections and the comments provided in support thereof. For the following reasons, Applicants assert that all claims now presented for examination in the present application are patentable over the cited art.

Amendments Addressing Informalities

The Examiner has objected to the drawings. According to the Examiner, “[t]he metallic mirror layer arranged between the thin-film semiconductor and the carrier, and the dielectric layer at least partially arranged between the thin-film semiconductor body and the metallic layer must be shown or the feature(s) canceled from the claim(s)”. In response to this objection, applicants have amended independent claims 1 and 13 to delete the subject matter identified by the Examiner as missing from the drawings. Therefore, the objection to the drawings is moot.

The Examiner has objected to claim 25 as being of improper form for failing to further limit the subject matter of a previous claim, and that “[i]n claims 16 to 18 ‘step b)’ should be replaced with --step d)--” and “[i]n claims 14, 15 and 26, ‘step c)’ should be replaced with --step e)--”. In view of the amendments to independent claims 1 and 13, and dependent claim 25, withdrawal of these objections is believed to be in order.

The Examiner has stated that “[i]t is unclear how the thin-film semiconductor body can be soldered onto the carrier if both the metallic layer and the dielectric layer are arranged

therebetween”. In view of the amendments to independent claims 1 and 13, this rejection is moot.

Patentability of the Independent Claims under 35 U.S.C. §103(a)

Independent claim 1 has been amended to recite, *inter alia*, “a thin-film semiconductor body based on a type III-V compound semiconductor material arranged on a carrier of the optoelectronic semiconductor component”. Independent claim 13 has been correspondingly amended. Support for this limitation may be found, for example, at pg. 6, lines 15-16 of the specification as originally filed. No new matter has been added. The cited art fails to teach or suggest this limitation.

Chang relates to a light-emitting diode having a metal-coated permanent substrate 44. *Chang* (col. 4; FIG. 4A) teaches that an LED structure 41 is grown on a temporary substrate 42. A metal bonding agent 43 is applied on the permanent substrate 44. The temporary substrate 42 along with the LED 41 is then thermally processed and connected to the permanent substrate with the aid of the metal bonding agent 43. *Chang* thus teaches the connection between the permanent substrate 44 and the LED 41 is achieved by the metal bonding agent 43. Here, the metal bonding agent 43 is in direct contact with both the LED 41 and the permanent substrate 44. The temporary substrate 42 is then subsequently removed. There is nothing in *Chang* regarding “a thin-film semiconductor body based on a type III-V compound semiconductor material,” as recited in now amended independent claim 1 and correspondingly recited in now amended independent claim 13.

Heremans relates to “light, emitting devices with a high radiation emission efficiency” (see col. 5, lines 10-11). *Heremans* (col. 10, lines 3-6; Fig. 1a) explains that “[a] layer structure is shown and the layers are made in semiconductor material, preferably III-V semiconductor material and the different layers can be made of different semiconductors”. Even assuming that

Heremans describes the use of a III-V semiconductor material, there is no express teaching or suggestion that this material is implemented in an optoelectronic semiconductor component, as expressly recited in now amended independent claims 1 and 13. *Chang* and *Heremans* teaches devices and structure of light emitting diode devices, i.e., LEDs. The claimed invention is an optoelectronic semiconductor component having “a thin-film semiconductor body based on a type III-V compound semiconductor material”.

The combination of *Chang* and *Heremans* thus fails to provide a device having “a thin-film semiconductor body based on a type III-V compound semiconductor material,” as recited in now amended independent claim 1 and correspondingly recited in now amended independent claim 13, because *Heremans* fails to provide what *Chang* lacks.

Yonehara relates to techniques associated with silicon-on-insulators. *Yonehara* (col. 7, lines 1-45; FIG. 1) teaches that an insulating layer 102 is applied on a first substrate 101. *Yonehara* teaches that a viscose flow-promoting layer 103 is formed by adding a boron or phosphorous impurity into a part of the insulating layer 102, where the insulating layer 102 is a thermally oxidized film originating from the substrate 101. *Yonehara* additionally teaches that the insulating layer 102 particularly comprises silicon dioxide. *Yonehara* further teaches that the first substrate 101 is bonded to a second substrate 110 by aid of the viscose flow-promoting layer 103. However, there is no teaching whatsoever of the claimed “thin-film semiconductor body based on a type III-V compound semiconductor material,” as recited in now amended independent claim 1 and correspondingly recited in now amended independent claim 13. Indeed, as explained at pg. 6, lines 14-20, the claimed optoelectronic device is preferably based on III-V compound semiconductor materials, and preferable emits wavelengths in the visible spectral range. The SOI substrates of *Yonehara* are intended for use in silicon microelectronics. Accordingly, the teachings of *Yonehara* fail to provide the skilled person with a basis or reason

to modify the teachings of *Chang* and *Heremans* to thereby achieve the expressly recited subject matter of independent claims 1 and 13 absent an impermissible hindsight analysis based on applicants' instant disclosure.

The combined teachings of *Chang*, *Heremans* and *Yonehara* thus fail to achieve a optoelectronic semiconductor component having a thin-film semiconductor body based on a type III-V compound semiconductor material in the manner recited in amended independent claims 1 and 13. The subject matter of amended independent claims 1 and 13 is therefore not rendered obvious by *Chang*, *Heremans* and *Yonehara*.

Dependent Claim 15

The Examiner (at pg. 5 of the Office Action) acknowledged that the combination of *Chang*, *Heremans* and *Yonehara* fails to teach or suggest "the use of laser irradiation to strip the TFS body [from] the carrier," as recited in dependent claim 15, and cites *Kelly* for this feature. Applicants disagree that any combination of *Chang*, *Heremans*, *Yonehara* and/or *Kelly* teaches the claimed invention.

Kelly discloses a method for separating two layers of material such that the two separated layers of material are essentially preserved (see Abstract). However, *Kelly* fails to explicitly teach or suggest the "thin-film semiconductor body based on a type III-V compound semiconductor material" of independent claims 1 and 13. *Kelly* thus fails to teach or suggest the optoelectronic semiconductor as defined by amended independent claims 1 and 13.

The combination of *Chang*, *Heremans*, *Yonehara* and *Kelly* therefore fails to teach or suggest the features recited in independent claims 1 and 13, let alone in dependent claim 15. Dependent claim 15 is, accordingly, patentable over the combination of *Chang*, *Heremans*,

Yonehara and Kelly. Reconsideration and withdrawal of the rejection of claim 15 under 35 U.S.C. §103 are requested.

In view of the patentability of independent claims 1 and 13, for the reasons presented above, each of the dependent claims 2-10 and 14-30 is patentable therewith. Moreover, each of these claims includes features which serve to even more clearly distinguish the invention over the applied references.

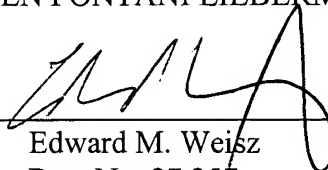
Conclusion

Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited.

Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

Respectfully submitted,
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